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AGRICULTURAL BULLETIN

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Gordon R. Groves, Director of Agriculture

AN OPEN LETTER TO THE DAIRY FARMERS

In 1960 your herds of dairy cattle produced 720,489 gallons of fresh milk. This is 58,965 gallons more than was produced in 1959, a very creditable achievement. These figures were obtained from the pasteurizing plants and represents the milk which you actually sold to the pasteurizers. No account is, therefore, taken of the milk which you may have used on your farms. The total value of this milk purchased by the pasteurizers at 1/5d. per quart is £204,138.

To produce this milk, you used 3,000 tons of dairy feed imported from the U.S.A. and Canada. The declared customs value of this feed was £80,000. You also imported cows from Canada valued at £4,075. Other requirements which you imported such as hay and other essentials amounted to perhaps another £10,000. In round figures the total cost of the imported items to produce this milk was £94,000, which leaves you £110,000 for your own wages, labour charges, interest on capital, rent and other overhead costs.

If we use the basis of one pint of milk per person per day as the milk requirements for 45,000 people, the annual milk consumption of Bermuda should be in the region of 2,063,125 gallons. Therefore, on this basis, your production of 720,489 gallons is slightly over one-third of the annual requirements of the resident population.

The declared customs value of imported milk including evaporated, condensed, dried and fresh milk and cream in 1959 was £179,713. (The 1959 figure is used here because at the time of writing, the Report of the Imports and Exports for 1960 is not at hand.) Assuming this to be the other two-thirds of the Colony's milk requirements, there is little difference in the amount of money which was spent overseas on milk, and that which was spent to produce a like amount locally. However, by importing the feed and the cow replacements to produce the milk here, it provides you and your employees with a livelihood and also the people engaged in the pasteurizing plants. Valuable fertilizer is also produced which is invaluable for the maintenance of soil fertility. Dairy farming, therefore, is a valuable asset to the community, but

unfortunately many of your farms are over-stocked and soil erosion is taking place which is a source of great concern to the Board and Department of Agriculture.

This, then, brings to mind several questions which the dairy farmer should ask himself.

(1) Am I making the best use of my farm for the production of green fodder crops and thereby reducing the costly imports of dairy feed?

(2) Am I safeguarding my farm and enterprise by adopting methods to stop soil erosion?

(3) Have I given sufficient thought to the more up-to-date methods of dairy farming, namely zero grazing or the pen system?

(4) Am I operating my farm in conformity with the regulations of the Public Health Department?

(5) Are my records adequate to determine if each dairy cow is a sufficiently high yielding animal to make my undertaking profitable?

(6) Is my farm overstocked?

It is, of course, for you to decide the answer you give to each question, but I do ask you to think very carefully regarding your future course.

I realise there will be many difficulties in the future to maintain the present production of milk, unless very careful consideration is given to the adoption of new methods. Soil erosion must be stopped.

The other day I was reading a British farming paper dealing with agriculture in the Eastern Counties of England in which a well known Agricultural Critic expressed the opinion that 'the day of farming as a separate industry is finished and that the future lies with agribusiness — as developed in America.' He continued by saying "It is only by dealing with agribusiness as a whole, for agriculture is just a small part of a very big business, that we can hope to get anywhere. We have to decide whether we are going to buckle down to the applications of new technologies in a business like way, or carry on in a lackadaisical fashion."

If it appeared necessary for an agricultural critic to make these remarks relative to agriculture in England where many of the farms are highly mechanized and through force of circumstances the farmers have to keep accurate costings of all farm operations, then, looking at some of our undertakings, it also appears necessary to take stock of our methods and to ask ourselves these pertinent questions.

I, therefore, appeal to you all to carefully analyse your present methods. To consider whether your system is the best which can be produced, bearing in mind the decreasing land area suitable for dairy farming. If you give serious thought to this matter I believe you will realise that there is an urgent need for a new system. A system which will allow the same number of dairy animals to be kept on a smaller land area, and one which will prevent soil erosion. Take stock of your position now, for it is much more pleasant to act on your own initiative than to be compelled to take action by Government intervention.

G. R. G.

ON THE FARMS

There is a bountiful supply of local vegetable produce on the market at present. The spring potato crop is now all in storage. Despite some very dry weather early in the growing season the potatoes are cropping very well, particularly those planted late in the season. Several farmers have recorded yields of over 10.1. Kennebecs are always good croppers and this year is no exception. For the first time in a number of years there will be good supplies of Garnet Chili potatoes on the local market. This potato used to be a great favourite with the farmers in the olden days since they are big yielders and will stand up to unfavourable weather conditions. The housewife is not too keen on the Garnet Chili, however, since the tuber tends to be rough and deep-eyed, and somewhat wet in texture.

The melon crops are very much in evidence now. Cantaloups are available in large numbers and will continue to be plentiful for the next two months or so. Farmers should inspect cantaloup vines carefully in order to uncover the first signs of powdery mildew, a serious disease of this crop. Spraying with zineb or copper will help to control this disease. Watermelons are not as seriously effected by mildew but are often attacked by a disease known as anthracnose which causes leaves to turn brown and fruit to become spotted. Many good fields of pumpkins are to be seen and there should be no shortage of this vegetable during the coming months.

Corn is available in quantity and is of very good quality. Farmers are reminded that corn which has been sprayed with DDT to control corn earworm should not be fed to milking cows.

Tomatoes are cropping very heavily and are likely to be abundant for at least six weeks. The variety Valiant which is currently being planted by many farmers produces a large uniform fruit of very good flavour.

Carrots and Onions will be available in ample supply for the next two months. As the summer progresses these vegetables will be marketed in crates rather than in the bunched state.

Growers should be planting green manure crops at this time of year. Cow peas are particularly good for this purpose in Bermuda. Allowed to grow until the start of flowering and then turned under, this crop will provide valuable supplies of organic matter and nitrogen. Field corn is also a good source of organic matter when ploughed under but does not add nitrogen to the soil in the way that the legumes do.

CARLYLE HOLLIS,
Agriculture Officer.

I. W. HUGHES,
Assistant Director of Agriculture.

NEW INSECTICIDE FOR CORN

A new insecticide called Sevin is now being produced by the Union Carbide International Company of New York. Sevin has proven successful in the control of a large number of important agricultural insects. One of the insects which is particularly well controlled by Sevin is the corn earworm, **Heliothis zea.** The corn earworm is a pest of great importance on corn and many other

vegetables in virtually all parts of the world. On corn it has been necessary in the past to apply DDT dusts or sprays every four or five days to get control of this pest, and even this expensive treatment is not always successful. The use of DDT on corn precludes the feeding of that corn to dairy animals since traces of DDT are likely to occur in the milk of cows fed such corn.

With the insecticide Sevin the control of corn earworm is made easier and at the same time the corn treated with Sevin can be fed to dairy cows.

The Department of Agriculture is using Sevin in experimental quantities on the current corn crop and if the trials are satisfactory the material will be used on a larger scale next season.

Two other comments on local corn: too often the farmer lets corn get too mature before harvesting the ears. While there is a natural tendency for the farmer to let the ears of corn fill out, the practice of waiting until the kernels at the tip of the ear are firm and yellow before harvesting results in a "tough" ear of corn. Corn is at its best when the majority of kernels on an ear are just maturing and are a pale yellow in colour.

Corn is often spoiled in the cooking. Freshly harvested corn needs very little cooking — not more than two or three minutes in boiling water. Over-cooking of fresh corn makes the product mealy and tough.

I. W. HUGHES,
Assistant Director of Agriculture.

MITES AS HOUSEHOLD PESTS

Everyone is more or less conditioned to the problem of insects in and around the house. Ants, cockroaches, flies, mosquitoes and so on are all a nuisance in the house, but we have come to accept their presence as just one of those things and we simply try and do our best to keep the number of these pests at a minimum. However, when a house is suddenly over-run by hundreds of tiny creatures known as mites the experience can be unnerving to say the least.

Mites are minute animals, often barely visible to the naked eye, which have many of the characteristics of the spider, but on a much reduced scale. Like the spiders, mites have four pairs of jointed legs in the adult stage as opposed to the three pairs of legs characteristic of all adult insects. Mites normally have mouthparts which are adapted for piercing and sucking. The life cycle of these creatures is comprised of an egg, nymphal and adult stage, all of which can be completed in as little as two or three weeks under favourable conditions.

Control of mites in the household is important because these pests attack and anoy man and domestic animals; are carriers of certain diseases; damage foodstuffs, and generally are the cause of considerable trouble once established in a house.

There are many different kinds of mites, many of which are free-living and feed upon decaying organic matter or vegetation (spider mites, rust mites of citrus); others are even adapted to marine living. This article will be con-

fined to a discussion of two species of mites which have been found in local households during the past few months and which are potentially troublesome pests.

Grain Mites:

Many mites in the family Acaridae (Tyroglyphidae) are common pests of human dwellings, stores and warehouses, where they attack all sorts of foodstuffs such as cereals, grains, flour, furniture packing, dried fruits and even cheese. Outbreaks of grain mites are not uncommon in Bermuda, particularly in the summer months. Cereals and flour are most likely to be the starting point of an infestation in a house.

The grain mites are small, white or yellowish, soft-bodied creatures which are scarcely bigger than a speck of dirt. When seen under a microscope the mites are armed with long hairs or setae which are characteristic of this group.

Under favourable conditions the grain mites multiply at a fantastic rate so that infested materials are literally alive with them. Heavily infested food products deteriorate rapidly and have a sour taste.

Persons living in a house badly infested with grain mites usually suffer from a complaint known as "grocer's itch", which is characterised by a rash resulting from contact with the mite. There is evidence to suggest that the bodies or excretions of the grain mites are toxic to humans. In addition, a purely allergic reaction is in some cases responsible for the rash. Respiratory symptoms may accompany the "grocer's itch".

If outbreaks of grain mite can be detected in an early stage control can be achieved by removing all infested foodstuff and burning these materials. Cupboards in which the food was stored should be washed out with a strong soap or detergent solution. The common aerosal spray bombs containing pyrethrin will give some control but will not check heavy infestations.

Once a house becomes over-run with grain mites there is virtually no control available except fumigation with a poisonous gas such as methyl bromide.

Care should to taken to check foodstuffs regularly, particularly during the summer months. Old, half-used boxes of cereal or biscuits should be thrown out and not allowed to serve as a breeding site for grain mites.

Poultry or Bird Mite:

The time-honoured Bermuda term "Maywing" undoubtedly refers to the poultry or bird mite. This small reddish-brown mite is very common in poultry houses at this time of year and in addition can be found in virtually all birds' nests, particularly those of the sparrow.

In poultry houses the mites hide during the day in cracks and crevices, in the nests, or in the litter. At night they emerge and attack the poultry and can cause serious even fatal illness to the birds. Like most mites the poultry mite breeds very rapidly and can quickly over-run a poultry house if not controlled.

Infestations of "Maywings" in sparrows' nests are a source of danger for households. If birds are allowed to nest in the eaves of houses, mites can, and

do, gain entrance to the house where they will attack man or his domestic animals, inflicting a painful bite. The bird mites actually bite and draw blood, and so are quite different from the grain mite mentioned earlier.

Control of poultry mites in poultry houses can best be achieved by spraying the roosts and litter with a malathion solution.

To prevent infestations of these mites becoming established in households care should be taken to prevent birds from nesting in the eaves or roofs of houses. If outbreaks of poultry mite occur in a house, malathion or DDT sprays will give good control provided the outbreak is caught at an early stage. Spraying becomes very difficult once a house is over-run with the mites. At this stage fumigation or fogging with an insecticide is the only practical means of control.

I. W. HUGHES,
Assistant Director of Agriculture.

TUBERCULIN TESTING

The two herds which last year contained clinical cases of open tuberculosis have been repeatedly tested, and it is now considered that the disease has been eradicated from them. Most of the dairy herds have been tested this year, and no new cases have been diagnosed. There have been about 50 animals that have shown an inconclusive reaction to the tuberculin tests. Five of these have been slaughtered as a safeguard and a check made to see if the disease is still present in its early stages following the severe open cases that were found in the Islands last year. There were no visible lesions in any of these animals. In order to get a clearer interpretation of the incidence of tuberculosis following the very dangerous situation that was present, the method of testing has been changed from the tail (caudal fold) method to the more accurate and sensitive single Intra dermal Comparative test in the skin of the neck.

In spite of the fact that this test is a highly accurate diagnostic procedure, it should be remembered that it is not infallible. Some of the reasons for confusion in the interpretation of the results are:—

1. In advanced cases the animal's tissues are so heavily infested with Mycobacterium Tuberculi bacilli that the body's antibobies are incapable of reacting to the tubercular proteins in the tuberculin and thereby fail to cause a swelling at the site of infection.
2. Animals in the early stages of this chronic infectious disease may not show any visible lesions at autopsy.
3. Sometimes the infection in an animal is discrete at a focal part which is not normally examined even with a thorough inspection of the carcass.
4. Animals may become infected with human or avian tuberculosis. Whereas these infections run a refractory course, usually producing no visible lesions, they will cause the animal to react to the test.

5. Other naturally occurring acid fast bacilli may cause the cattle to be sensitized to tuberculin. There is some evidence that this may occur in Bermuda because quite a few animals show a decreasing or unusual reaction to both tuberculins on frequent testing.

COLIN W. BROWN,
B.Sc., M.R.C.V.S., M.R.S.H.,
Government Veterinary Officer.

GARDEN CALENDAR FOR JUNE

Flower Garden.

The greater majority of spring-flowering annuals will by now have completed their decorative life-span, and removal from the beds should take place. This is particularly important for two reasons. One, of course, is the unsightly appearance they may now present, and the second concerns disease problems. Many plants may show varying degrees of bacterial or virus infection, and these have possibly become more visible as the plants have declined.

Many of these diseases may be carried over in the soil and will attack the next crop of that or a similar kind planted.

Rust infection on the foliage of Antirrhinums (Snapdragons) is possibly an outstanding example of this type of problem. A light infection this year could produce enough spores to completely cripple your display next year.

Such trouble as this may be readily controlled by partial soil sterilization. However, methods of application may prove too troublesome and uneconomical to the small grower.

Two simple remedies, however, are to grow your crops in a slightly different spot in the garden each year, and to select out those varieties which appear to be more resistant than others, for future planting. There are available on the market a number of rust-resistant varieties of Snapdragons. This degree of resistance may be open to doubt, under local conditions, but they are worth trying out.

Sowing of Zinnias, French and African Marigolds, Portulaca and a little later, the "Cockscomb Flower" Celosia, made at monthly intervals now and through the summer months, will provide floral display and cut flowers in succession. These should be sown directly in their flowering quarters.

Now is the time to give thought to the ordering of Chrysanthemum plants for planting next month. These will supply colour in abundance in August through to Christmas.

DONALD J. MOORE,
Superintendent,
Bermuda Botanical Gardens.

SYDNEY GOLDEN WATTLE

Acacia Longifolia.

The Sydney Golden Wattle is a shrub or small tree, native of Australia. It was introduced to Bermuda four years ago by the Bermuda Botanical Gardens, in the form of seed. Grown successfully in the nursery this tree was used in various planting schemes and also placed under trial in the Montpelier Arboretum.

In the Arboretum, the Sydney Golden Wattle was planted in an exposed location and in relatively shallow soil on a hillside. Gratifying results were obtained — this tree successfully withstood many strong winter winds and adapted itself to the light sandy soil conditions without any difficulty. Its growth was rapid, equalling the growth rate of the casuarina and tolerating the same rugged growing conditions as the casuarina.

All who passed through the Arboretum last March could not help seeing this tree with its mass of golden pom-pom blooms on the hillside below what is now the Police Club. Its thin oblong leaves are shiny and conspicuous from a distance. At the present time the multitude of flowers have been replaced with thousands of dainty seed pods. These seeds are now being collected and will be grown for distribution in Bermuda.

The Sydney Golden Wattle, growing in light sandy soil in Southampton, has withstood wind and salt spray. Its growth has not been impaired by these rugged conditions for it has averaged five feet of growth each year over the last three years. It is an excellent subject for Islandwide planting in Bermuda, and trees should be available for distribution in approximately one year.

J. H. J.

WEATHER RECORDING STATION AT BOTANICAL GARDENS

Summary of Climatological date obtained at the Botanical Gardens during May, 1961

Mean maximum temperature 73.1
Mean minimum temperature 63.7
Mean monthly temperature 68.4
Absolute maximim 77.5 on May 23
Absolute minimum 51.3 on May 7
Rainfall 7.97 inches
No. of rain days 14